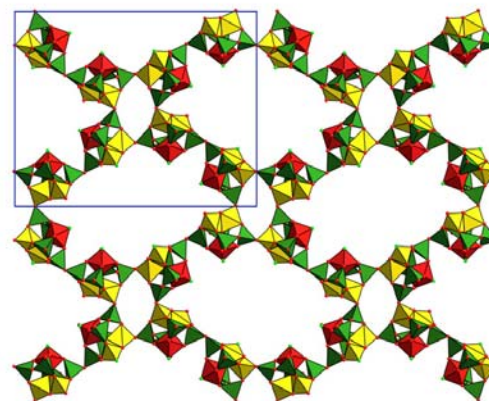


# Low Density Germanates. Michael O’Keeffe

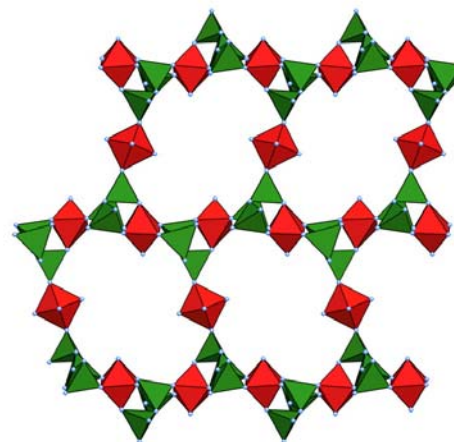
## Arizona State University DMR 01 03036

Low density “open framework” oxide materials are of vital importance as catalysts (forming gasoline, etc), in separations, and many other uses. In the search for ever more open materials a commonly used criterion is framework density, which is the number of metal atoms per unit volume ( $\text{nm}^3$ ). The lowest density for an aluminosilicate zeolite is about  $12 \text{ nm}^{-3}$ .

We have recently made a germanate (ASU-16) and a zirconogermanate (ASU-24) with the lowest-ever framework densities ( $8.6$  and  $8.5 \text{ nm}^{-3}$  resp).



ASU-16



ASU-24